## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT** of:

Ariela Zeira

Patent No.:

7,346,103

**Issued:** 

March 18, 2008

Appln. No.:

10/748,544

Filed:

December 30, 2003

Confirmation No.: 8569

For: MULTI USER DETECION USING EQUALIZATION AND SUCCESSIVE INTERFERENCE CANCELLATION

Our File:

I-2-0472.1US

Date:

May 7, 2008

# REQUEST FOR CERTIFICATE OF CORRECTION

Certificate of Corrections Branch Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

A Certificate of Correction under 35 U.S.C. §§ 254, 255 and 37 C.F.R. §§1.322, 1.323 is requested for U.S. Patent No. 7,346,103. Correction of the following errors is requested.

## ON THE FACE PAGE

At section (56), OTHER PUBLICATIONS, page 1, right column, line 11, on line beginning with "Misra et al.", after the word "Hybrid", insert --of--.

### IN THE SPECIFICATION

At column 2, line 6, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 39, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 41, after the word "segments", delete " $r_1$  ...  $r_n$ " and insert therefor -- $\underline{r}_1$  ...  $\underline{r}_n$ --.

At column 2, line 42, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 44, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 45, after the first use of the word "segments", delete " $r_1 \dots r_n$ " and insert therefor -- $r_1 \dots r_n$ --.

At column 2, line 45, after the words "only segments", delete " $r_1$ ,  $r_2$ ,  $r_3$ ,  $r_4$ ,  $r_5$ ,  $r_6$ ,  $r_7$ ,  $r_8$ " and insert therefor -- $\underline{r}_1$ ,  $\underline{r}_2$ ,  $\underline{r}_3$ ,  $\underline{r}_4$ ,  $\underline{r}_5$ ,  $\underline{r}_6$ ,  $\underline{r}_7$ ,  $\underline{r}_8$ --.

At column 2, line 46, before the word "shown", delete "r<sub>9</sub>" and insert therefor --r<sub>9</sub>--.

At column 2, lines 47 & 48, after the words "overlap is", delete "preferably twice the length the impulse response less one chip, 2\*(W-1)" and insert therefor --at least two chips less than twice an impulse response length--.

At column 2, line 54,, after the words "interest of", delete " $r_2$ " and insert therefor -- $r_2$ --.

At column 3, line 18, after the word "segment", delete " $r_i$ " and insert therefor -- $r_i$ --.

At column 3, line 20, after the word "segments", delete " $r_i$ ,  $x_{i1}$ , ...,  $x_{iK-1}$ " and insert therefor -- $\underline{r}_i$ ,  $\underline{x}_{i1}$ , ....  $\underline{x}_{iK-1}$ --.

At column 3, line 21, after the word "vectors", delete " $s_{i1}$ ,  $s_{i2}$ , ...,  $s_{iK}$ " and insert therefor --  $\underline{s}_{i1}$ ,  $\underline{s}_{i2}$ , ...,  $\underline{s}_{iK-}$ .

At column 3, line 23, after the word "vectors", delete " $s_{i1}$ ,  $s_{iK}$ , ...,  $s_{iK}$ " and insert therefor --  $\underline{s}_{i1}$ ,  $\underline{s}_{i2}$ , ...,  $\underline{s}_{iK-}$ .

At column 3, line 25, after the word "vectors", delete " $d_{i1}$ ,  $d_{i2}$ , ...,  $d_{iK}$ " and insert therefor --  $\underline{d}_{i1}$ ,  $\underline{d}_{i2}$ , ...,  $d_{iK-}$ 

At column 3, line 28, after the words "contributions", delete " $r_{i1}$ ,  $r_{i2}$ , ..." and insert therefor -- $\underline{r}_{i1}$ ,  $\underline{r}_{i2}$ , ...-.

At column 3, line 29, after the word "vector", delete " $s_{i1}$ ,  $s_{i2}$ , ..." and insert therefor -- $\underline{s}_{i1}$ ,  $\underline{s}_{i2}$ , ...--.

At column 3, line 31, after "butions", delete " $r_{i1}$ ,  $r_{i2}$ , ..." and insert therefor -- $\underline{r}_{i1}$ ,  $\underline{r}_{i2}$ , ...-.

At column 3, line 32, after the words "segments", delete " $r_i$ ,  $x_{i1}$ , ..." and insert therefor -- $\underline{r}_i$ ,  $\underline{x}_{i1}$ , ...--.

At column 3, line 35, after the word "segment", delete " $r_i$  is equalized by a" and insert therefor -- $\underline{r}_i$  is equalized by an--.

At column 3, line 37, after the word "vector", delete " $s_{i1}$ " and insert therefor -- $\underline{s}_{i1}$ --.

At column 3, line 41, after the word "vector", delete " $d_{i1}$ " and insert therefor -- $\underline{d}_{i1}$ --.

At column 3, line 43, after "mined", delete " $r_{i1}$ " and insert therefor -- $\underline{r}_{i1}$ --.

At column 3, line 45, after the word "segment", delete " $x_{i1}$ " and insert therefor  $-\underline{x}_{i1}$ --.

At column 3, line 48, after the word "symbols", delete " $d_{i2}$ " and insert therefor -- $\underline{d}_{i2}$ --.

At column 3, line 49, after the word "vector", delete " $S_{i2}$ " and insert therefor -- $\underline{S}_{i2}$ --.

At column 3, lines 50 & 51, after the words "user 2 to", delete " $X_{i1}$ ,  $r_{i2}$ " and insert therefor -- $\underline{x}_{i1}$ ,  $r_{i2}$ --.

At column 3, line 53, after the word "segment", delete " $x_{iK-1}$  which is vector  $\mathbf{r}_i$ " and insert therefor --  $\underline{\mathbf{x}}_{iK-1}$  which is vector  $\underline{\mathbf{r}}_i$  --.

At column 3, line 55, after the word "symbols", delete " $d_{iK}$ " and insert therefor -- $\underline{d}_{iK}$ --.

At column 3, line 56, after the word "vector", delete " $s_{iK}$ " and insert therefor -- $\underline{s}_{iK}$ --.

At column 3, line 59, before the word "signals", delete "users" and insert therefor --user's--.

At column 4, line 2, before the word "data", delete "groups" and insert therefor --group's--.

At column 4, line 6, after the words "such as", delete " $d_i$ " and insert therefor  $-\underline{d}_i$ --.

At column 4, line 11, after the words "vector", delete "d" and insert therefor --<u>d</u>--.

At column 4, line 14, after the word "segment 1", delete "d<sub>11</sub>" and insert therefor

--<u>d</u>11---.

At column 4, line 15, after the word "segment 2", delete " $d_{12}$ " and insert therefor -- $\underline{d}_{12}$ --.

At column 4, line 17, after the word "vector", delete "r" and insert therefor --r--.

At column 4, line 19, after the word "segmented", delete " $r_1 \dots r_n$ " and insert therefor -- $\underline{r}_1 \dots \underline{r}_n$ --.

At column 4, line 32, after the word "vector", delete "d" and insert therefor -- $\underline{d}$ --. At column 4, delete Equation 1, and insert therefor -- $\underline{r}_i = H\underline{s} + \underline{n}$ --.

At column 4, line 44, after the word "matrix", delete "n is the noise vector. s" and insert therefor  $-\underline{n}$  is the noise vector.  $\underline{s}$ --.

At column 4, line 47, before the words "for the", delete "d" and insert therefor --<u>d</u>--.

At column 4, delete Equation 2, and insert therefor  $--\underline{s} = C\underline{d}$ --.

At column 4, line 52, after the word "segment", delete " $r_i$ " and insert therefor -- $r_i$ --.

At column 4, delete Equation 4A, and insert therefor  $--\underline{\hat{s}}_i = (H_s^H H_s + \sigma^2 I_s)^{-1} H_s^H \underline{r}_i$ --.

At column 4, line 61, before the word "operation", delete "Hermetian" and insert therefor --Hermitian--.

At column 4, delete Equation 4B, and insert therefor --  $\underline{\hat{s}}_i = (H_s^H H_s)^{-1} H_s^H \underline{r}_i$  --.

At column 4, delete Equation 5, and insert therefor  $--\underline{\underline{\$}}_i = R_s^{-1}H_sH\underline{r}_{i--}$ 

At column 5, line 35, before the word "product", delete "kronecker" and insert therefor --Kronecker--.

At column 5, line 37, after the word "vector", delete "F( $\hat{\mathbf{s}}$ )" and insert therefor --F( $\hat{\mathbf{s}}$ )--.

At column 5, line 38, after the word "vector", delete "\$" and insert therefor --\u00e8--.

# IN THE CLAIMS

At claim 1, column 5, lines 41 & 42, after the word "signals", delete "in a wireless communication system, the method".

At claim 7, column 6, lines 1 & 2, after the word "signals", delete "in a wireless communication system, the method".

At claim 22, column 7, line 18, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 28, column 7, line 52, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 34, column 8, line 19, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 40, column 8, line 51, after the word "each", delete "segment" and insert therefor --segment's--.

At claim 41, column 8, line 56, after the word "equalize", delete "equalizing".

At claim 46, column 9, line 18, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 52, column 9, line 51, after the word "each", delete "segment" and insert therefor --segment's--.

At claim 58, column 10, line 19, before the word "determined", delete "segments" and insert therefor --segment's--.

## REMARKS

Patentee believes that the above errors are of such a nature as to justify the issuance of a Certificate of Correction. Patentee has enclosed a completed Certificate of Correction Form PTO/SB/44.

Since at least one of the errors was caused by Applicant, please charge the surcharge fee pursuant to C.F.R. §1.20(a) of \$100.00 to the Deposit Account of InterDigital Communications Corporation, Deposit Account No. 09-0435.

Patentee respectfully requests that the Certificate of Correction be issued.

Respectfully submitted,

Ariela Zeira

Robert D. Leonard

Registration No. 57,204

 $(215)\ 568-6400$ 

Volpe and Koenig, P.C. United Plaza, Suite 1600 30 South 17th Street Philadelphia, PA 19103

RDL/dcb

# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 8

PATENT NO.

7,346,103

APPLICATION NO.: 10/748,544

ISSUE DATE

: March 18, 2008

INVENTOR(S)

: Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

## ON THE FACE PAGE

At section (56), OTHER PUBLICATIONS, page 1, right column, line 11, on line beginning with "Misra et al.", after the word "Hybrid", insert --of--.

#### IN THE SPECIFICATION

At column 2, line 6, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 39, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 41, after the word "segments", delete " $r_1 \dots r_n$ " and insert therefor  $-\underline{r}_1 \dots \underline{r}_n$ --.

At column 2, line 42, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 44, after the word "vector", delete "r" and insert therefor --r--.

At column 2, line 45, after the first use of the word "segments", delete "r<sub>1</sub> ... r<sub>n</sub>" and insert therefor  $--r_1 \dots r_{n}$ --.

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Volpe and Koenig, P.C. United Plaza, Suite 1600 30 South 17th Street Philadelphia, PA 19103

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Page 2 of 8

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It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 2, line 45, after the words "only segments", delete "r<sub>1</sub>, r<sub>2</sub>, r<sub>3</sub>, r<sub>4</sub>, r<sub>5</sub>, r<sub>6</sub>, r<sub>7</sub>, r<sub>8</sub>" and insert therefor  $-\underline{r}_1$ ,  $\underline{r}_2$ ,  $\underline{r}_3$ ,  $\underline{r}_4$ ,  $\underline{r}_5$ ,  $\underline{r}_6$ ,  $\underline{r}_7$ ,  $\underline{r}_8$ ---.

At column 2, line 46, before the word "shown", delete "r<sub>9</sub>" and insert therefor --<u>r</u><sub>9</sub>--.

At column 2, lines 47 & 48, after the words "overlap is", delete "preferably twice the length the impulse response less one chip, 2\*(W-1)" and insert therefor --at least two chips less than twice an impulse response length--.

At column 2, line 54,, after the words "interest of", delete "r<sub>2</sub>" and insert therefor --r<sub>2</sub>--.

At column 3, line 18, after the word "segment", delete " $r_i$ " and insert therefor -- $r_i$ --.

At column 3, line 20, after the word "segments", delete " $r_i$ ,  $x_{i1}$ , ...,  $x_{iK-1}$ " and insert therefor  $-\underline{r}_i, \underline{x}_{i1}, \dots \underline{x}_{iK-1}$ --.

At column 3, line 21, after the word "vectors", delete "si1, si2, ..., siK" and insert therefor  $-- \underline{S}_{i1}, \underline{S}_{i2}, ..., \underline{S}_{iK--}$ 

At column 3, line 23, after the word "vectors", delete "s<sub>i1</sub>, s<sub>iK</sub>, ..., s<sub>iK</sub>" and insert therefor  $-- \underline{S}_{i1}, \underline{S}_{i2}, ..., \underline{S}_{iK--}$ 

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: Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 3, line 25, after the word "vectors", delete "d<sub>i1</sub>, d<sub>i</sub>2, ..., d<sub>ik</sub>" and insert therefor  $-- \underline{d}_{i1}, \underline{d}_{i2}, ..., \underline{d}_{iK--}$ 

At column 3, line 28, after the words "contributions", delete "r<sub>i1</sub>, r<sub>i2</sub>, ..." and insert therefor  $-\underline{\mathbf{r}}_{i1}, \underline{\mathbf{r}}_{i2}, \dots$ 

At column 3, line 29, after the word "vector", delete " $s_{i1}$ ,  $s_{i2}$ , ..." and insert therefor -- $\underline{s}_{i1}$ ,  $\underline{s}_{i2}$ , ...-.

At column 3, line 31, after "butions", delete " $r_{i1}$ ,  $r_{i2}$ , ..." and insert therefor -- $r_{i1}$ ,  $r_{i2}$ , ...-.

At column 3, line 32, after the words "segments", delete "r<sub>i</sub>, x<sub>i1</sub>, ..." and insert therefor  $-\underline{\mathbf{r}}_{i}, \underline{\mathbf{x}}_{i1}, \dots$ 

At column 3, line 35, after the word "segment", delete "r<sub>i</sub> is equalized by a" and insert therefor --r<sub>i</sub> is equalized by an--.

At column 3, line 37, after the word "vector", delete "s<sub>i1</sub>" and insert therefor --s<sub>i1</sub>--.

At column 3, line 41, after the word "vector", delete " $d_{i1}$ " and insert therefor -- $\underline{d}_{i1}$ --.

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# UNITED STATES PATENT AND TRADEMARK OFFICE

Page 4 of 8

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: 7,346,103

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INVENTOR(S)

: Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

CERTIFICATE OF CORRECTION

At column 3, line 43, after "mined", delete " $r_{i1}$ " and insert therefor -- $\underline{r}_{i1}$ --.

At column 3, line 45, after the word "segment", delete " $x_{i1}$ " and insert therefor -- $x_{i1}$ --.

At column 3, line 48, after the word "symbols", delete "d<sub>i2</sub>" and insert therefor --d<sub>i2</sub>--.

At column 3, line 49, after the word "vector", delete " $S_{i2}$ " and insert therefor -- $\underline{s}_{i2}$ --.

At column 3, lines 50 & 51, after the words "user 2 to", delete "X<sub>i1</sub>, r<sub>i2</sub>" and insert therefor  $--x_{i1}, r_{i2}--.$ 

At column 3, line 53, after the word "segment", delete "x<sub>iK-1</sub> which is vector r<sub>i</sub>" and insert therefor --  $\underline{x}_{iK-1}$  which is vector  $r_i$  --.

At column 3, line 55, after the word "symbols", delete " $d_{iK}$ " and insert therefor -- $\underline{d}_{iK}$ --.

At column 3, line 56, after the word "vector", delete " $s_{iK}$ " and insert therefor -- $\underline{s}_{iK}$ --.

At column 3, line 59, before the word "signals", delete "users" and insert therefor --user's--.

At column 4, line 2, before the word "data", delete "groups" and insert therefor --group's--.

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ISSUE DATE : March 18, 2008

INVENTOR(S) : Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 4, line 6, after the words "such as", delete " $d_i$ " and insert therefor -- $\underline{d}_i$ --.

At column 4, line 11, after the words "vector", delete "d" and insert therefor --d--.

At column 4, line 14, after the word "segment 1", delete " $d_{11}$ " and insert therefor -- $\underline{d}_{11}$ --.

At column 4, line 15, after the word "segment 2", delete " $d_{12}$ " and insert therefor -- $\underline{d}_{12}$ --.

At column 4, line 17, after the word "vector", delete "r" and insert therefor --<u>r</u>--.

At column 4, line 19, after the word "segmented", delete " $r_1 \dots r_n$ " and insert therefor -- $r_1 \dots r_n$ --.

At column 4, line 32, after the word "vector", delete "d" and insert therefor --d--.

At column 4, delete Equation 1, and insert therefor  $-\underline{r}_i = H\underline{s} + \underline{n}$ --.

At column 4, line 44, after the word "matrix", delete "n is the noise vector. s" and insert therefor --<u>n</u> is the noise vector. s--.

At column 4, line 47, before the words "for the", delete "d" and insert therefor  $-\underline{d}$ --.

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Page \_\_6 of 8

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INVENTOR(S)

: Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 4, delete Equation 2, and insert therefor  $--\underline{s} = C\underline{d}$ --.

At column 4, line 52, after the word "segment", delete "r<sub>i</sub>" and insert therefor --r<sub>i</sub>---.

At column 4, delete Equation 4A, and insert therefor  $-\hat{s}_i = (H_s^H H_s + \sigma^2 I_s)^{-1} H_s^H r_{i-1}$ 

At column 4, line 61, before the word "operation", delete "Hermetian" and insert therefor --Hermitian--.

At column 4, delete Equation 4B, and insert therefor  $-...\hat{s_i} = (H_s^H H_s)^{-1} H_s^H r_i -...$ 

At column 4, delete Equation 5, and insert therefor  $-.\hat{s}_i = R_s^{-1}H_s^H r_{i-1}$ 

At column 5, line 35, before the word "product", delete "kronecker" and insert therefor --Kronecker--.

At column 5, line 37, after the word "vector", delete " $F(\hat{s})$ " and insert therefor -- $F(\hat{s})$ --.

At column 5, line 38, after the word "vector", delete " $\hat{s}$ " and insert therefor  $-\hat{s}$ --.

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It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

#### IN THE CLAIMS

At claim 1, column 5, lines 41 & 42, after the word "signals", delete "in a wireless communication system, the method".

At claim 7, column 6, lines 1 & 2, after the word "signals", delete "in a wireless communication system, the method".

At claim 22, column 7, line 18, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 28, column 7, line 52, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 34, column 8, line 19, before the word "determined", delete "segments" and insert therefor --segment's--.

At claim 40, column 8, line 51, after the word "each", delete "segment" and insert therefor --segment's--.

At claim 41, column 8, line 56, after the word "equalize", delete "equalizing".

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: Ariela Zeira

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At claim 46, column 9, line 18, before the word "determined", delete "segments" and insert therefor -- segment's --.

At claim 52, column 9, line 51, after the word "each", delete "segment" and insert therefor --segment's--.

At claim 58, column 10, line 19, before the word "determined", delete "segments" and insert therefor -- segment's --.

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